
उत्तम कृषि व्यवहार रीतियों की अपेक्षाएँ — भारतगैप

भाग 5 कॉफी आधारित

Requirements for Good Agricultural Practices — IndiaGAP

Part 5 Coffee Base

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भारतीय मानक ब्यूरो

BUREAU OF INDIAN STANDARDS

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FOREWORD

This Indian Standard (Part 5) was adopted by the Bureau of Indian Standards, after the draft finalized by the Agricultural Systems and Management Sectional Committee had been approved by the Food and Agriculture Division Council.

Considerable milestones have been reached in productivity of farm produce in the country. Concerns about food safety and quality, environmental protection, worker safety and welfare have also gained importance. Thus, it is desirable to set up control and compliance systems for various kinds of farm produce covering horticulture, floriculture, food grains, aquaculture, livestock, poultry etc. In this context, it is necessary to pay attention to the quality of production practices requiring minute attention at different aspects of production, storage, handling and distribution.

There are different systems and standards available for control measures for processing of food meant for human consumption and feeds for animals producing food for human consumption. The areas where appropriate control measures need to be strengthened are farms producing raw material such as food grains, fruits and vegetables, floriculture produce, aquaculture produce, livestock products etc. to ensure sustained supply of produce of the desirable quality.

Although grade standards on size, shape, colour and local preferences are available for most of the agricultural produce marketed and consumed in India, their quality in terms of maturity standards, residues of pesticides and other contaminants, microbial loads, etc. have not been adequately covered. Good Agricultural Practices (GAP) have a bearing on these parameters. In other words, a farm producing raw material for direct consumption or for further processing and following GAP would have an advantage in terms of safety and quality over the other farms. Thus, these practices would add value to the produce.

In India, agricultural practices are highly localized occupations and display a lot of variability in cultural practices and varietal preferences across regions. Further, with the opening up of the world market, there is a flow of trade in the agricultural products. It is, therefore, necessary to define and assign certain common minimum standards to facilitate trade in these products and to win the confidence of the consumers within the country and outside.

Such standards envisaging focused approach for implementing good agricultural practices, traceability etc. through appropriate infrastructure, record keeping and monitoring would reap following broad benefits:

- a) Development of basic infrastructure at the field level,
- b) Build up culture for good agricultural practices by the farmers,
- c) Uniform approach across farms regardless of their sizes
- d) Increased awareness among the farmers as well as the consumers about the need for consumption of good quality and safe food,
- e) Traceability through complete integration of food chain,
- f) Improvement in the environment as well as soil fertility
- g) Worker safety and welfare.
- h) Reputation in the international market as a producer of good quality and safe produce, and
- i) Overcoming the Technical Barriers to Trade (TBTs).

With this in view this Indian Standard has been formulated to standardize Coffee Based Agricultural Practices in India keeping in mind the best of international practices and suiting the needs of the Indian farmer.

This standard IS 15930 is published in nine parts. The other parts in the series are:

- Part 1 Crop base
- Part 2 Fruit and vegetable base

(Continued on third cover)

Indian Standard

REQUIREMENTS FOR GOOD AGRICULTURAL PRACTICES — INDIAGAP

PART 5 COFFEE BASE

1 SCOPE

1.1 This standard (Part 5) covers the control points and compliance criteria, necessary to be followed by the producers (individual growers and/or members of a grower group) of Coffee.

2 TERMINOLOGY

2.1 Good Agriculture Practices — Practices that address environmental, economic and social sustainability for on-farm processes, and result in safe and quality food and non-food agricultural products.

2.2 Applicant Grower/Grower Group — Individual/organization that has applied for certification to IndiaGAP certification body.

2.3 Pesticide — Plant protection products such as insecticides, fungicides, weedicides etc.

2.4 Hazard — A biological, chemical, physical agent in, or condition of, food with the potential to cause an adverse health effect.

2.5 Individual Grower — A person/organization legally responsible for on farm production, who retains ownership of all the produce covered in the IndiaGAP licence.

2.6 Inspection — An examination of all agricultural practices in order to verify compliance to requirements specified in this standard.

2.7 Water, Irrigation — Water which is artificially applied in the process of irrigation. It does not include precipitation.

2.8 Water, Potable — Water which does not contain objectionable pollution, contamination, minerals, or infection, and is considered satisfactory for domestic consumption.

2.9 Produce — The material recovered from harvesting of a crop.

2.10 Product — Processed and value added produce.

2.11 Record — Document showing objective evidence of the tasks performed and results achieved.

2.12 Self-Inspection — Internal inspection of the registered product crop carried out by the grower on his/her farm using control points and compliance criteria.

2.13 Traceability — The ability to trace the history, use or location of a product (that is, the origin of materials and parts, processes applied to the product, or its distribution and placement after delivery) by means of a record.

2.14 Worker — Any person on the farm that has been contracted to carry out a task. This includes farm owners and managers.

2.15 In-organic Fertilizer — Commercial chemical fertilizer.

2.16 Grower Group — A recognized group of growers applying for certification with an internal procedure and internal control of all the members registered to the IndiaGAP requirements, which and complying the requirements as specified in this standard.

2.17 Field — Separate unit of land within a farm.

2.18 Farm — A farm is an agricultural production unit or group of agricultural production units; covered by same operational procedures, farm management.

2.19 Environment — Surroundings in which an activity takes place including air, water, land, natural resources, flora, fauna, humans, and their interrelation.

2.20 Customer — A customer is anyone who purchases products or services from a supplier.

2.21 Crop rotation — The practice of growing different crops in succession on the same land according to pre-defined plan.

2.22 Certification — All actions leading to the issuance of an IndiaGAP licence.

2.23 Crop — Plants cultivated or organisms grown and/or harvested for economic purpose.

3 CONTROL POINTS AND COMPLIANCE CRITERIA

3.1 Control points and compliance criteria required to be followed by the applicant producer (individual grower and/or member of a grower group) as well as by the certification body for independent verification of the agricultural practices that have gone into the production of the produce are given in Annex A. In addition, the applicant producer (individual grower and/or member of a grower group) shall demonstrate

compliance with all applicable statutory and regulatory requirements.

3.2 In addition to **3.1**, the applicant producer (individual grower and/or member of a grower group) shall demonstrate compliance with Control Points and Compliance Criteria laid down in Indian Standard — ‘Requirements for Good Agricultural Practices — IndiaGAP: Part 1 Crop Base’.

3.3 These criteria are marked as ‘Major’ or ‘Minor’ or ‘Reco’. The criteria marked as ‘Major’ have a definite effect on the safety and quality of the produce and shall, therefore, be complied with, or shall give adequate assurance about the safety and quality of the produce. The criteria marked as ‘Minor’, though have a bearing on quality, are those which, if implemented, would provide an advantage to the assessment for IndiaGAP certification. The criteria marked as ‘Reco’, are those, which though may not have direct bearing on safety and quality of produce but may have other benefits to the producer and are recommended for

implementation and are advisory in nature.

3.4 For the purpose of verification, a grading pattern given below shall be followed for grant of IndiaGAP licence:

<i>Category of Licence</i>	<i>Compliance of Major Requirements</i>	<i>Compliance of Minor Requirements</i>
IndiaGAP — A	100%	90%
IndiaGAP — B	100%	80%
IndiaGAP — C	100%	75%

4 BIS INDIAGAP CERTIFICATION

4.1 BIS IndiaGAP certification shall be as prescribed under the provisions of *Bureau of Indian Standards Act*, 1986 and Rules and Regulations framed thereunder. The details of the conditions under which the licence may be granted to producer (individual grower and/or member of a grower group) may be obtained from the Bureau of Indian Standards.

ANNEX A
(Clause 3.1)

CONTROL POINTS AND COMPLIANCE CRITERIA

Sl No.	Item	Level	IndiaGAP requirements	Compliance criteria
A-1	PLANTING MATERIAL			
A-1.1	Choice of Variety or Rootstock			
A-1.1.1	<i>Planting Material Awareness</i>	Minor	The producer shall be aware of the importance of effective crop husbandry in relation to the rootstock, scion and quality seed of the crop.	Farmers should demonstrate availability of documents/literature to support his understanding about the selection of the planting material used.
A-2	SITE HISTORY AND SITE MANAGEMENT			
A-2.1	Site History			
A-2.1.1	<i>Deforestation</i>	Major	The new farm shall not NOT have been deforested after September 2004.	There is evidence that the farmed area has not derived from primary forest deforested after September 2004 nor from secondary forest without compensation.
A-2.1.2	<i>Compliance with Biodiversity Rules</i>	Minor	New plantings shall comply with the relevant local and national regulation with respect to land use and biodiversity conservation.	There is documented evidence that the new plantations comply with the relevant local and national regulation with respect to land use and biodiversity conservation.
A-2.1.3	<i>Compatibility with Resource Conservation</i>	Minor	In the absence of relevant regulation on land use and bio-diversity conservation, new coffee plantings shall be compatible with good resource conservation practice proven in comparable locations.	New coffee plantings are compatible with good resource conservation practice proven in comparable locations.
A-3	SOIL AND SUBSTRATE MANAGEMENT			
A-3.1	Soil Fumigation (Not applicable, if no soil fumigation)			
A-3.1.1	<i>Justification</i>	Minor	There shall be a written justification for the use of soil fumigants.	There is written evidence and justification for the use of soil fumigants including location, date, active ingredient, doses, method of application and operator. The use of Methyl Bromide as soil fumigant is not permitted.
A-3.1.2	<i>Pre-planting interval</i>	Minor	Any pre-planting interval shall be complied with	The gap between fumigation and planting must be recorded.
A-3.1.3	<i>Alternative to chemical fumigation</i>	Reco	Alternatives to chemical fumigation should be explored before resorting to the use of chemical fumigants.	The producer is able to demonstrate assessment of alternatives to chemical soil fumigation through technical knowledge, written evidence or accepted local practice.

A-4	FERTILIZER USE			
A-4.1	Fertilizer Storage			
A-4.1.1	<i>Application methods</i>	Minor	The most appropriate and efficient method of application shall be followed.	The fertilizer application method (broadcasting/ring application etc. or as recommended by the coffee research institutes) should take in to account the slope of the lands, rain forecasts and other such factors for the efficient utilization by the bushes as well as contamination through loss in to the surrounding environment.
A-4.2	Organic Fertilizer			
A-4.2.1	<i>Composting</i>	Minor	The animal manure and other organic materials shall be properly composted prior to application as per NSOP.	Evidence to show compliance with NSOP.
A-5	IRRIGATION/FERTIGATION			
A-5.1	Irrigation/Fertigation Method			
A-5.1.1	<i>Optimization</i>	Minor	Consideration shall be given to a water management plan to optimize water usage and reduce waste.	A documented plan which outlines the steps and actions to be taken to implement the process.
A-5.2	Quality of Irrigation Water			
A-5.2.1	<i>Microbial contamination</i>	Reco	The analysis should consider the microbial contaminants.	According to the risk analysis, there is a documented record of the relevant microbial contaminants.
A-5.2.2	<i>Chemical pollutant</i>	Reco	The analysis should consider the chemical pollutants.	According to the risk analysis, there is a documented record of any chemical residues.
A-5.2.3	<i>Heavy metal pollutants</i>	Minor	The analysis shall consider the heavy metal pollutants.	According to the risk analysis, there is a documented record of any heavy metals contaminants.
A-5.2.4	<i>Risk management</i>	Reco	Any adverse results should be acted upon.	Records are available of what actions have been taken and what the results are so far.
A-6	PLANT PROTECTION			
A-6.1	Basic Elements			
A-6.1.1	<i>Instructions on crop protection products</i>	Major	There shall be, clear instructions in place, for not using fertilizers or crop protection products within 5 meters of any permanent stream.	There is in place clear instructions and documented records that all persons involved in crop protection products usage are well informed for not using crop protection products within 5 meters (or more if required by law).
A-6.2	Choice of Plant Protection Products			
A-6.2.1	<i>Awareness of banned chemicals</i>	Major	The farmer shall be aware of the banned chemicals and there shall be a process that prevents chemicals that	The documented plant protection product application records confirm that no plant protection product that have been used within the last 12 months on the crops grown under IndiaGAP destined for sale

			are banned in the target country from being used on crops destined for sale in that country.	has been prohibited by the target country.
A-6.3	Records of Application			
A-6.3.1	<i>Spray record</i>	Major	All the crop protection product applications shall be recorded including the re-entry time of people into the sprayed area.	Documented in all crop protection products application records for each product applied, the re-entry time has been recorded.
A-6.4	Plant Protection Product Transportation			
A-6.4.1	<i>Compliance with local regulations</i>	Minor	Crop protection products shall be transported safely, with attention to minimizing human and environmental contamination and if applicable, transported in accordance with local regulations.	When transportation of crop protection products is done by farm or group of compliant farms, transportation complies to local regulations on chemical transport, or at least in a proper manner to prevent spilling and other accidents.
A-7	HARVESTING			
A-7.1	Hygiene			
A-7.1.1	<i>Risk assessment</i>	Major	A hygiene risk analysis shall be performed for the harvest and pre-farm gate transport process.	There is a documented and up to date (reviewed annually) risk assessment covering physical, chemical and microbiological contaminants and human transmissible diseases, customized to the products and operation of the processing unit.
A-7.1.2	<i>Risk management</i>	Major	A hygiene procedure shall be implemented for the harvesting process	As a direct result of the harvest and pre-farm gate transport hygiene risk analysis, a documented hygiene procedure has been implemented.
A-7.1.3	<i>Cleanliness of handling equipment</i>	Major	The harvesting process hygiene procedure shall consider containers and tool handling.	Reusable harvesting containers, harvesting tools (i.e., scissors, knives, pruning shears, etc) and harvesting equipment (machinery) are cleaned and maintained, and a cleaning and disinfection schedule is in place (at least once a year) to prevent produce contamination.
A-7.1.4	<i>Cleanliness of transport vehicles</i>	Major	The harvesting process hygiene procedure shall consider on farm produce transportation.	Farm vehicles used for transport of harvested produce that are also used for any purpose other than transport of harvested produce, are cleaned and maintained, and a cleaning schedule to prevent produce contamination is in place (i.e. soil, dirt, organic fertilizer, spills, etc.).
A-7.1.5	<i>Access to hand washing</i>	Major	Harvest workers shall have access to clean hand-washing equipment in the vicinity of their work.	Fixed or mobile hand washing equipment to clean and disinfect hands is accessible to harvest workers.

A-7.1.6	<i>Access to clean toilets</i>	Minor	Harvest workers shall have access to clean toilets in the vicinity of their work.	Fixed or mobile toilets (including pit latrines) constructed of materials that are easy to clean and with catch basins designed to prevent contamination in the field are accessible to harvest workers within 500m and they are in a good state of hygiene. Where an employee is working independently, the 500m distance can be modified to allow the presence of toilets at an increased distance, providing that there is reasonable and adequate transport available to the worker.
A-7.2	Mould Prevention			
A-7.2.1	<i>Segregation</i>	Minor	Contact of the harvested coffee cherries with sources of fungal contamination shall be minimized.	Cherries that have fallen on the ground or were in contact with other source of fungal contamination are not to be processed. The Code of Practice for Prevention of Mould Formation (ICO - International Coffee Organization) on growing and harvesting is used as a reference guide.
A-7.2.2	<i>Harvesting time</i>	Major	Harvested coffee cherries shall be processed the same day of harvesting or if this is not possible, within a maximum period of 24 hours.	Coffee cherries are processed within 24 hours after harvesting.
A-7.3	Harvested Coffee Measurements			
A-7.3.1	<i>Calibration</i>	Major	The weights and/or volume-measures that define the weight or volume of harvested coffee shall be calibrated at least once a year.	The weights and/or volume-measures that define the weight or volume of harvested coffee are calibrated. There are documented records of verification of calibration within the last 12 months that has been carried out by specialized technicians.
A-8	PROCESSING (applies to in-house or outsourced milling)			
A-8.1	General			
A-8.1.1	<i>Traceability</i>	Major	If the coffee grower does not process his own coffee, the traceability at the outsourced mill shall be ensured.	When the coffee farm or group of compliant farms does not process its own coffee, the outsourced milling process must have a documented system to ensure that traceability of this coffee is maintained.
A-8.1.2	<i>Mould prevention</i>	Reco	Mould prevention should be assured on every step of the post harvest product handling.	The Code of Practice for Prevention of Mould Formation (ICO — International Coffee Organization), on processing (general, wet OR dry process and hulling), storing and internal transport, is used as a reference guide.
A-8.2	Principles of Hygiene			
A-8.2.1	<i>Risk assessment</i>	Minor	A hygiene risk analysis shall be performed for the harvested crop	There is a documented and up to date (reviewed annually) risk assessment covering physical, chemical and

			handling process that covers the hygiene aspects of the produce handling operation.	microbiological contaminants and human transmissible diseases, customized to the products and operation of the pack house.
A-8.2.2	<i>Risk management</i>	Minor	A hygiene procedure shall be implemented for the process of harvested crop handling.	The farm manager or other nominated person is responsible for implementation of the hygiene procedure as a direct result of the produce handling hygiene risk analysis.
A-8.3	Personal Hygiene			
A-8.3.1	<i>Worker instructions</i>	Major	Workers shall have received basic instructions in hygiene before handling produce.	There must be evidence that the workers received training, whether verbal or written. Training must be documented.
A-8.3.2	<i>Implementation of instructions</i>	Minor	The workers shall implement the hygiene instructions for handling produce.	There is evidence that the workers are complying with the hygiene instructions.
A-8.3.3	<i>Protective clothing</i>	Reco	All workers should wear outer garments suitable for the operation to avoid contamination.	All workers wear outer garments (e.g. smocks, aprons, sleeves, gloves) that are suitable for the operation according to the risk analysis. This will depend on the product and operation.
A-8.3.4	<i>Cleaning of clothes</i>	Minor	The protective clothing (outer garments) shall be changed and/or regularly cleaned to avoid cross-contamination according to the risk analysis.	The outer garments are changed and/or regularly cleaned according to the risk analysis from 8.2.1.
A-8.3.5	<i>Smoking/eating instructions</i>	Minor	Smoking, eating, chewing and drinking shall be confined to designated areas.	Smoking, eating, chewing and drinking are confined to designated areas. (Drinking water is the exception).
A-8.3.6	<i>Signages</i>	Minor	Signs with the main hygiene instructions shall be there inside the packing facilities and shall be clearly displayed for workers and visitors.	Signs with the main hygiene instructions must be visibly displayed in the packing facility.
A-8.4	Sanitary Facilities			
A-8.4.1	<i>Access to clean toilets</i>	Major	Workers in the packing facility shall have access to clean toilets and hand washing facilities in the vicinity of their work.	Toilets in a good state of hygiene must not open directly onto the produce handling area, unless the door is self-closing. Hand washing facilities, containing non-perfumed soap, water and hand dry facilities must be accessible and close by the toilets.
A-8.4.2	<i>Hand washing facilities</i>	Major	Signs shall be clearly displayed instructing workers to wash their hands before returning to work.	Signs must be visible with clear instructions that hands must be washed before handling products, especially after using toilets, eating, etc.
A-8.4.3	<i>Change rooms</i>	Reco	There should be suitable	The changing facilities must be used to

			changing facilities for the workers	change clothing and protective outer garments as required.
A-8.4.4	<i>Lockers</i>	Reco	Lockable storage facilities should be there for the workers.	Secure storage facilities must be provided at the changing facility to protect the workers' personal belongings.
A-8.5	Processing and Storage Areas			
A-8.5.1	<i>Maintenance of equipment</i>	Minor	Produce handling facilities and equipment shall be cleaned and maintained so as to prevent contamination.	Produce handling facilities and equipment (i.e. process lines and machinery, walls, floors, storage areas, pallets, etc.) must be cleaned and/or maintained according to the cleaning and maintenance schedule, to prevent contamination, and documented record.
A-8.5.2	<i>Storage of cleaning agents</i>	Minor	Cleaning agents, lubricants, etc. shall be stored to prevent chemical contamination of produce.	Cleaning agents, lubricants, etc. are kept in a designated area separate and apart from where produce is packed, to avoid chemical contamination of produce.
A-8.5.3	<i>Approval of cleaning agents</i>	Minor	Cleaning Agents, Lubricants, etc. that may come into contact with produce, shall be approved for application in the food industry, and their dose rates shall be followed correctly.	Documentary evidence exists authorizing (i.e. specific label mention or technical data sheet) use for the food industry of Cleaning Agents, Lubricants, etc. which may come into contact with produce.
A-8.5.4	<i>Maintenance of forklifts, etc</i>	Reco	All forklifts and other driven transport trolleys should be clean and well maintained and of suitable type to avoid contamination through emissions.	Internal transport should be maintained to avoid product contamination, with special attention to fume emission. Forklifts and other driven transport trolleys should be electric or gas-driven.
A-8.5.5	<i>Waste disposal</i>	Minor	Rejected produce and waste material in the packing environment shall be stored in designated areas, which are routinely cleaned and/or disinfected.	Rejected produce and waste material are stored in designated areas, which are routinely cleaned and/or disinfected to avoid contamination.
A-8.5.6	<i>Breakage safe lamps</i>	Minor	Breakage safe lamps or lamps with a protective cap shall be used above the sorting, weighing and storage area.	Light bulbs and fixtures suspended above produce or material used for produce handling are of a safety type or are protected/shielded so as to prevent contamination of food in case of breakage.
A-8.5.7	<i>Risk prevention</i>	Major	The risk of contamination by glass or any other physical contaminants shall be prevented.	The risk for contamination with any other physical contaminants must also be prevented. This applies to temporary holdings, long-term stores and all product movement areas.
A-8.5.8	<i>Storage of packing material</i>	Minor	Packing materials shall be clean and stored in clean and hygienic conditions.	Packing materials (incl re-useable crates) are stored in a clean and hygienic area, to prevent product contamination until used.
A-8.5.9	<i>Restrictions on animals</i>	Minor	Access of animals to the facilities shall be restricted.	Animal access to facilities is managed, to prevent produce contamination.

A-8.6	Quality Control			
A-8.6.1	<i>Record of quality inspections</i>	Minor	A documented inspection process shall be in place to ensure compliance to a defined quality standard.	An inspection process is in place to ensure products are packed according to prescribed and documented quality standards.
A-8.6.2	<i>Record of temperature and humidity</i>	Minor	Temperature and humidity controls shall be maintained and documented where packed produce are stored on farm.	If packed produce are stored on farm, temperature and humidity controls must be maintained and documented in accordance with the hygiene risk assessment results.
A-8.6.3	<i>Stock rotation</i>	Reco	Stock rotation should be managed.	Stock rotation must be managed to ensure maximum product quality and safety.
A-8.6.4	<i>Verification of temperature control equipment</i>	Minor	There shall be a process for verifying measuring and temperature control equipment.	Equipment used for weighing and temperature control, must be routinely verified according to a risk analysis.
A-8.7	Rodent and Bird Control			
A-8.7.1	<i>Prevention from birds and rodents</i>	Minor	All entry points to buildings or equipment that may come in contact with rodents and/or birds shall be suitably protected to prevent, whenever practically possible, the ingress of rodents and birds.	Visual assessment.
A-8.7.2	<i>Site plans for baits</i>	Minor	There shall be site plans with bait points and/or traps.	Site plan showing bait points must exist.
A-8.7.3	<i>Bait protection for non-target species</i>	Minor	Baits shall be placed in such a manner that non-target species do not have access.	Visual observation. Non-targeted species must not have access to the bait.
A-8.7.4	<i>Record of pest control</i>	Minor	Detailed records of pest control inspections and necessary actions taken, shall be kept	Records of pest control inspections and follow up action plan(s). The producer can have his own records. Inspections must take place whenever evidence of pests present. In case of vermin must have a contact number or evidence of in-house capability to control pests.
A-8.8	Wet Method-Post Harvest Treatment (Not applicable when wet method is not used)			
A-8.8.1	<i>Record of water management</i>	Major	Evidence of effective water management in the wet processing unit shall be available.	There is evidence available that the wet method-processing unit performs effective water management (proper equipment, recycling, recirculation, filtering, percolation).
A-8.8.2	<i>Minimization of water use</i>	Minor	Water use shall be minimized for wet method.	Records are maintained that demonstrate that an effective water management plan is in place to minimize the use of water in the whole process of wet method. Water used for the pulping of the cherries and for transport of pulp is minimized by i.e.

				screw conveyers, gravity-transport with screeners, etc. National or local legislation or industry standards (i.e. Coffee Association) are complied with.
A-8.8.3	<i>Water quality</i>	Major	The water entering the wet processing unit shall be clean.	When local water is not potable, water used for the pulping, washing and fermentation process is filtered or otherwise treated before it enters the process so that it does not introduce contaminants.
A-8.8.4	<i>Water circulation</i>	Reco	Water usage for the pulping process should be minimized or water should be recirculated.	Water usage for the pulping of the cherries and transport is minimized by i.e. screw conveyers, gravity transport with screeners, etc., or water is recirculated.
A-8.8.5	<i>Reuse of solid waste</i>	Reco	Solids collected from the filtering system should be reused.	Whenever possible, solids collected from the filtering system are reused as compost/fertilizer.
A-8.8.6	<i>Water treatment</i>	Major	The contaminated water coming out of the wet processing unit shall be treated.	The water coming out of the wet processing unit must be treated to minimize impact of watercourses, i.e. through oxygenation or filtration. The effectiveness of the treatment is judged on its physical appearance and visual evidence of contamination. National and local legislation must be complied with.
A-8.8.7	<i>Prevention of fungal infection</i>	Minor	Contact of drying coffee beans with sources of fungal contamination shall be minimized.	* Direct soil contact must be avoided. * Beans must be protected from rain and moisture. * Drying coffee must be turned regularly. * Water content of beans must remain maximally 12.5%. * Equipment and facilities must be kept clean.
A-8.8.8	<i>Moisture management during processing</i>	Minor	During hulling and storage of dry coffee, proper moisture management shall be in place.	* Beans, parchment and husk must be stored completely separated and identified. * Cleaned dried beans must be separated and identified from discarded material. * Dried coffee must be stored in leak-proof warehouses. * Stored coffee must be away minimum 30 cm from the walls. * Clean bags must be used for storing cleaned dried beans. * Sacked coffee must be stored without contact with the floor.
A-8.8.9	<i>Technology for measurement of humidity</i>	Major	The humidity percentage of dried green coffee beans shall be measured with reliable technique.	There is evidence that humidity percentage measurement technique for coffee beans is reliable.
A-8.8.10	<i>Prevention of rewetting of coffee</i>	Minor	During loading and transportation of dried coffee beans, re-wetting	When exposed to rain, trucks must not be loaded and unloaded with dried coffee beans. Trucks must be clean, dry, odour -

			of the beans shall be prevented.	free and must not enter wet inside the processing unit.
A-8.9	Dry Method – Post Harvest Treatment (Not applicable when dry method is not used)			
A-8.9.1	<i>Prevention of fungal infection during drying</i>	Minor	Contact of drying coffee cherries with sources of fungal contamination shall be minimized.	* Direct soil contact must be avoided. * Beans must be protected from rain and moisture. * Drying coffee must be turned regularly. * Water content of beans must remain maximally 12.5%. * At high moisture content where mould contamination can occur, the thickness of the layer of cherries should be thin enough to prevent this. * Equipment and facilities must be kept clean.
A-8.9.2	<i>Moisture management</i>	Minor	During hulling and storage of dry coffee, proper moisture management shall be in place.	* Dry cherries, beans, parchment and husk must be stored completely separated and identified. * Dried coffee must be separated and identified from discarded material. * Dried coffee must be stored in leak-proof warehouses. * Storage must be away minimum 30 cm from the walls. * Clean bags must be used for storing cleaned dried cherries and beans. * Sacked coffee must be stored without contact with the floor.
A-8.9.3	<i>Moisture control</i>	Major	The moisture percentage of dried green coffee beans shall be measured accurately.	There is evidence that the technique of moisture measurement in green coffee beans is reliable.
A-8.9.4	<i>Prevention of rewetting during transport</i>	Minor	During loading and transportation of dried coffee beans, re-wetting of the beans shall be prevented.	When exposed to rain, trucks must not be loaded and unloaded with dried coffee beans. Trucks must be clean, dry, odour - free and must not enter wet inside the processing unit.
A-9	WASTE AND POLLUTION MANAGEMENT, RECYCLING AND RE-USE			
A-9.1	Re-use of Coffee By-products			
A-9.1.1	<i>Use of coffee by-products</i>	Minor	Coffee by-products shall be re-used.	Coffee by-products must be re-used as fertilizer, mulch or energy source or sold. Parchment can be burned as energy source for machine drying or any other energy source. It cannot be burned as waste.
A-9.2	Waste and Pollution Action Plan			
A-9.2.1	Disposal of household waste	Major	There shall be a plan for the proper disposal of household waste from the labour quarters within the coffee plantation.	There is a plan and measures/actions in place for the correct disposal of the domestic and other wastes generated in the labour quarters within the coffee plantation.

A-10	ENVIRONMENT AND CONSERVATION			
A-10.1	Impact of Farming on the Environment			
A-10.1.1	<i>Prohibition of de-forestation</i>	Major	The deforestation of primary and secondary forests shall be prohibited.	Deforestation of primary forest is prohibited whereas justified cutting for domestic use of primary forest, only under a management plan is possible. Deforestation of secondary forest is not allowed without compensation or a recovery plan.
A-10.1.2	<i>Possibility of re-forestation</i>	Reco	Areas in the farm not suitable for coffee production should be reforested.	All areas in the farm not suitable for coffee production should be reforested.
A-10.1.3	<i>Forest conservation</i>	Minor	Forest patches shall be conserved.	All forest patches not used for coffee plantations should be conserved.
A-10.1.4	<i>Watershed conservation</i>	Minor	Watersheds shall be protected and conserved.	All watersheds belonging to the farm should be protected and conserved.
A-10.1.5	<i>Shades of tree species</i>	Minor	Native or well-adapted tree species shall be used as shade for the coffee.	Native or well-adapted tree species must be preferred as shade for the coffee.
A-10.1.6	<i>Native vegetation</i>	Minor	Native vegetation shall be allowed to grow along streams.	Native vegetation is allowed to grow along streams to control erosion, filter out agrochemicals and protect wildlife habitat.
A-10.1.7	<i>Protection of endangered species</i>	Minor	Threatened and endangered species and habitats shall be protected, including adequate measures to restrict hunting or commercial collection of flora and fauna.	There are in place effective measures to restrict hunting or commercial collection of flora and fauna.
A-10.1.8	<i>Communication with public park managers</i>	Minor	If the farm is within two kilometres of a designated park or biological corridor, there shall be evidence that the producer has communication with the public park managers.	Farms within a distance of two kilometres of a designated park or biological corridor should have communication with the park authorities and there should be no legal challenges to the farms' location or operation.
A-10.1.9	<i>Eco and cultural preservation</i>	Reco	Areas of ecological, social, cultural or religious significance should be clearly identified, delineated and preserved.	Areas of ecological, social, cultural or religious significance should be clearly identified, delineated and preserved.
A-10.2	Energy Use			
A-10.2.1	<i>Monitoring of energy use</i>	Minor	There shall be a plan in action to monitor the use of energy.	A system measuring the use energy is in place.
A-10.2.2	<i>Energy conservation</i>	Minor	The farm, group of registered farms, or processing unit shall demonstrate measures to conserve or use energy more efficiently in energy-intensive activities.	Documentary evidence exists showing an efficient use of energy in the whole processing unit operations.

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A-10.2.3	<i>Energy savings</i>	Reco	There should be a plan in action to monitor the savings of energy.	A system measuring the savings of energy is in place by reduction in consumption and substitution of non-renewable sources of energy by renewable ones.
A-10.2.4	<i>Wood fuel management</i>	Minor	If fire woods are used as fuel for coffee drying, it shall come from managed woodlots or pruning from within the farm itself, and not from native forests, unmanaged community forests, watersheds or protected areas.	When fire woods are used as fuel for coffee drying, it must come from managed woodlots or pruning from within the farm itself, and not from native forests, unmanaged community forests, watersheds or protected areas.
A-11	COMPLAINT FORM			
A-11.1	Storage of samples	Major	There shall be in place, a system where representative lot samples of green coffee (with reference codes) are kept and to be analyzed in case of any complaint.	There is a system in place where representative lot samples of green coffee (with reference codes) are kept to be analyzed for chemical residues in case of any complaint. Samples to be kept for at least one year.

ANNEX B

(Foreword)

INDIAN STANDARDS WHICH FACILITATE IMPLEMENTATION OF THIS STANDARD

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
609 : 1955	Code of practice for improvement of existing structures used or intended to be used for food grain storage	7730 : 1975	Definitions and measurement (<i>first revision</i>)
2491 : 2013	Food Hygiene — General Principles — Code of Practice (<i>third revision</i>)	7731 : 1975	Guide for storage of pears
4015 : 1998	Guide for handling cases of pesticide poisoning (<i>first revision</i>)	8453 : 1977	Guide for storage of peaches
5503	General requirements for silos for grain storage :	9303 : 1979	Code of practice for construction of polyethylene embedded earthen bins for bulk storage of food grains
(Part 1) : 1969	Constructional Requirements	9304 : 1979	Guide for cold storage of table grapes
(Part 2) : 1969	Grain handling equipment and accessories	9311 : 2001 / ISO 1673 : 1991	Guide for storage of mangoes
5686 : 1970	Code of practice for handling and storage of oilseeds	9696 : 1980	Onions — Guide to storage (<i>first revision</i>)
5985 : 1985	Code of practice for handling and storage of bagged fertilizers (<i>first revision</i>)	9979 : 1981	Code of practice for installation of farm drainage tile or pipe system
6028 : 2002 / ISO 931 : 1980	Green bananas — Guide to storage and transport (<i>second revision</i>)	10017 : 1981	Code for design and laying of mineral filters for tile drain system
6151	Storage management code:	10317 : 1982	Code of practice for construction of cocoa beans storage structures
(Part 2) : 1971	General care in handling and storage of agricultural produce and inputs	10500 : 2012	Guide for evaluation of soil properties relevant to irrigation
(Part 3) : 1976	Specific care in handling and storage of agricultural produce and inputs	10808 : 1984	Drinking Water (<i>second revision</i>)
6399 : 1971	Code of practice for construction of coffee seed storage structures	10907 : 1984	Code of practice for installation, operation and maintenance of hydraulic rams
6669 : 2001/ ISO 1212 : 1995	Apples — Guide to cold storage (<i>first revision</i>)	11494 : 1986	Code for design of farm drainage tile or pipe system
6670 : 1972	Guide for storage of potatoes	11495 : 1986	Code for construction and maintenance of surface farm drainage systems
7191 : 2001 / ISO 5524 : 1991	Tomatoes — Guide to cold storage and refrigerated transport (<i>first revision</i>)	11495 : 1986	Code for design of surface farm drainage system
7192 : 1974	Guide for storage of citrus fruits	11538 : 1986	Code of practice for design and installation of farm drainage pumping plants
7247	Code of Practice for Fumigation of Agricultural Produce:	11624 : 1986	Guidelines for the quality of irrigation water
(Part 1) : 1974	Part 1 Methyl Bromide	11711 : 1986	Recommended criteria for adoptability of different irrigation methods
(Part 3) : 1974	Aluminium Phosphide	11816	Storage of cereals and pulses:
(Part 4) : 1975	Ethylene Dichloride and Carbon Tetrachloride Mixture	(Part 1) : 2010/ ISO 6322-1 : 1996	General recommendations for the keeping of cereals (<i>first revision</i>)
(Part 5) : 1985	General Requirements	(Part 2) : 2009/ ISO 6322-2 : 2000	Practical recommendations (<i>first revision</i>)
7252 : 2013	Fruits and vegetables — Physical conditions in cold stores —	(Part 3) : 1986	Control of attack by vertebrate and invertebrate animals

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
11965 : 1987 / ISO 6000 : 1981	Round-headed cabbage — Storage in the open		irrigation system — Code of practice
11966 : 1997 / ISO 6663 : 1995	Garlic — Guide to cold storage (<i>first revision</i>)	14792 : 2000	Irrigation equipment — Design, installation and operation of sprinkler irrigation system — Code of Practice
11977 : 1987 / ISO 3959 : 1977	Green bananas — Ripening condition		Hazard Analysis and Critical Control Point (HACCP) — Requirements for any organization in the food chain
13062 : 1991	Irrigation equipment and systems — Evaluation of field irrigation efficiencies — Guidelines	15000 : 2013	Guidelines for storage and transportation of bamboo shoot
13939 : 1994	Farm drainage — Interceptor drains for steep hill slopes under plantation crops — Guidelines for laying	15691 : 2006	Food safety management systems — Requirements for any organization in the food chain
14632 : 1999	Farm drainage system — Performance evaluation of horizontal sub-surface drainage — Guidelines	IS/ISO 22000 : 2005	Food safety management Requirements for bodies providing audit and certification of food safety management systems
14634 : 1999	Code of practice for preparation and application of blue green algae as bio-fertilizer in soils	IS/ISO TS 22003 : 2007	Food safety management systems — Guidance on the application of ISO 22000:2005
14791 : 2000	Prevention and treatment of blockage problem in drip	IS/ISO TS 22004 : 2005	

(Continued from second cover)

Part 3 Combinable crop base

Part 4 Tea base

Part 6 Livestock base

Part 7 Poultry base

Part 8 Cattle and sheep base

Part 9 Dairy base

In the formulation of this standard considerable assistance has been derived from Agricultural and Processed Food Products Export Development Authority (APEDA).

NOTE — The standards given in Annex B may be read to facilitate the implementation of this standard and are for guidance purpose.

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